

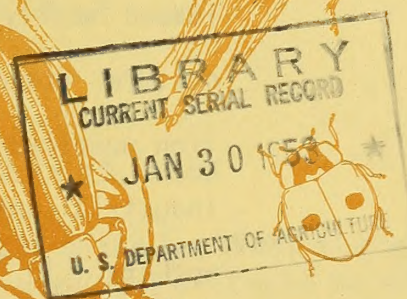
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JANUARY 16, 1953

Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

**BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
AGRICULTURAL RESEARCH ADMINISTRATION
UNITED STATES DEPARTMENT OF AGRICULTURE**

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

DIVISION OF INSECT DETECTION AND IDENTIFICATION

SECTION OF ECONOMIC INSECT DETECTION AND REPORTING

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Bureau serves as a clearing house and does not assume responsibility for accuracy of the material.

Reports and inquiries pertaining to this release should be mailed to:

Section of Economic Insect Detection and Reporting
Bureau of Entomology and Plant Quarantine
Washington 25, D. C.

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

Comparative importance of COTTON PESTS within orders and families.
(page 36)

SUMMARY OF INSECT CONDITIONS in ALABAMA. (page 40)

TOMATO FRUITWORM, ONION THRIPS, AND WIREWORMS survey
methods. (pages 43, 44)

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WEATHER FOR THE WEEK ENDING JANUARY 12, 1953

The past week was abnormally warm, particularly in the far West where above normal temperatures prevailed the entire week and averaged as much as 21° above normal. In the Plateau region maximum temperatures rose to record or near record levels on several days. At Salt Lake City, Utah, maxima ranged in the upper 50's from the 8th to the 12th inclusive and equaled or broke the daily records.

From the eastern portions of the Great Plains to the Atlantic Coast average temperatures for the week were a few degrees above normal, except slightly below in Florida, Illinois, Indiana, Ohio, and southern Michigan. Freezes in the southeast extended almost to the Gulf (Montgomery, Alabama 31° and Alma, Georgia 29°) at the beginning of the period, and to the Gulf (Mobile, Alabama 31°) at the end. Below-zero temperatures were general in the north-central interior on the 6th and 7th with a low of -26° at International Falls, Minnesota, on the 6th, and occurred again in eastern North Dakota

and northern Minnesota on the 11th. Caribou, Maine, recorded -10° on the 7th, and minima in extreme northern New York and New England fell to zero or below until the last two days of the week.

Precipitation occurred almost daily in northern sections west of the Continental Divide and was general over the Pacific States from the 6th through the 8th. Weekly totals exceeded an inch in northern California, western portions of Washington and Oregon, extreme northern Idaho and northwestern Montana, and ranged up to over 4 inches in western sections of Washington and Oregon. In western Washington and Oregon the heavy rains caused some minor flooding and high winds on the 8th and 9th caused considerable damage to power and communication lines.

In the Lake Region, the Southwest and between the Continental Divide and the Mississippi River, precipitation was very light with no measurable amounts in the central and lower Great Plains, and generally less than a quarter of an inch elsewhere. East of the Mississippi, except in the Lake Region, rain or snow occurred daily in most sections until the last day. Heavy rains with thunderstorms occurred in the Southeast on the 8th and 9th, with 24-hour amounts exceeding 4 inches at Birmingham, Alabama, on the 8th, and Key West, Florida, on the 9th.

From Iowa and Missouri to Pennsylvania freezing drizzle made travel hazardous, but the only losses reported were from some sections of Pennsylvania where the ice thickness reached several inches and damaged trees and destroyed some wildlife. Light snow fell over northern areas early in the period, and heavy snow in portions of New England and eastern New York about the middle of the period. (Summary Supplied by U. S. Weather Bureau)

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Reports in this issue are for the week ending January 10 unless otherwise designated.

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) -- **SOUTH CAROLINA** - Continues moderately abundant in many grain fields in Charleston area. (F. P. Cuthbert).

TRUCK CROP INSECTS

APHIDS (Aphidae) -- **CABBAGE APHID (Brevicoryne brassicae)** and **TURNIP APHID (Rhopalosiphum pseudobrassicae)** infestations continue heavy on cole crops in the Gadsden County, **FLORIDA** area. (L. M. May) Cabbage aphid infestations absent or light in plant beds and recently set fields of winter-spring cabbage in Charleston, **SOUTH CAROLINA** area. This insect is now much less abundant than at this time in 1951 and 1952. Present indications that this aphid may not be a serious problem in the spring of 1953. Light infestations of turnip aphid and **GREEN PEACH APHID (Myzus persicae)** on young cabbage. Green peach aphid moderately abundant in one spinach field. (F. P. Cuthbert) Cabbage aphid infestations persist in many cole crop fields in eastern **VIRGINIA**. Green peach aphid infestations on spinach are being held down, in part, by parasites and diseases. (Brubaker, Greenwood, Hofmaster)

Vegetable Insect Conditions in Lower Rio Grande Valley, Texas

CABBAGE LOOPERS (Trichoplusia ni) are a problem in many fields. A **ROOT APHID** is causing stunting in many cabbage fields. Heavy infestations in one turnip field. A few predators observed, but not abundant enough to give much control. **ONION THRIPS (Thrips tabaci)** infesting practically all onion fields. Seedling-stage tomatoes being damaged by **CUTWORMS (Phalaenidae)**.

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) -- **ARIZONA** - One specimen found at Sahuarita in Pima County, December 12, 1952. (L. F. Curl) Pima County was formerly infested, but was removed from quarantine April 4, 1952 after no pink bollworm had been found for several years.

COOPERATIVE IMPORTANCE OF COTTON PESTS WITHIN ORDERS OR FAMILIES

At the Cotton Insect Research and Control Conference held at Memphis, Tennessee December 7, 8, and 9, 1952, eighty-one entomologists and associated technical workers from 13 cotton-growing states, United States Department of Agriculture, and the National Cotton Council were given the opportunity to indicate the important pests of cotton in the states or areas where each worker is located. The tabulation below indicates the opinions of those who cooperated in furnishing the information. (R. W. Harned)

Order or Family	Insect (*In order of importance)	States Reporting
Acrididae	1. Differential grasshopper (<u>Melanoplus differentialis</u>)	7
	2. Lesser migratory grasshopper (<u>M. mexicanus</u>)	4
	3. Red-legged grasshopper (<u>M. femur-rubrum</u>)	3
	4. American grasshopper (<u>Schistocerca americana</u>)	3
	5. Two-striped grasshopper (<u>M. bivittatus</u>)	2
Gryllidae	1. Field cricket (<u>Acheta assimilis</u>)	5
Thripidae	1. Tobacco thrips (<u>Frankliniella fusca</u>)	7
	2. Flower thrips (<u>F. tritici</u>)	7
	3. Onion thrips (<u>Thrips tabaci</u>)	8
	4. Sericothrips <u>variabilis</u>	3
	Other thrips receiving votes: bean thrips (<u>Hercothrips fasciatus</u>), <u>F. runneri</u> , <u>F. exigua</u> .	

* The relative importance of the pests within the groups shown was obtained by averaging the different ratings assigned to each pest by the various states reporting. The tabulation attempts to show only the comparative importance, within specific limitations, of cotton pests of the United States.

Order or Family	Insect (In order of importance)	States Reporting
Hemiptera	1. Cotton fleahopper (<u>Psallus seriatus</u>) 2. Tarnished plant bug (<u>Lygus lineolaris</u>) 3. Rapid plant bug (<u>Adelphocoris rapidus</u>) 4. Say stink bug (<u>Chlorochroa sayi</u>) 5. Southern green stink bug (<u>Nezara viridula</u>) 6. Brown cotton bug (<u>Euschistus impictiventris</u>) 7. Green stink bug (<u>Acrosternum hilare</u>) Other hemiptera receiving votes: cotton dauber or western plant bug (<u>Lygus hesperus</u>), superb plant bug (<u>Adelphocoris superbus</u>), <u>Lygus elisus</u>, red-shouldered plant bug (<u>Thyanta custator</u>), <u>Creontiades debilis</u>, <u>C. femoralis</u>, conchuela (<u>Chlorochroa ligata</u>).	8 9 8 3 3 4 3
Aphidae	1. Cotton aphid (<u>Aphis gossypii</u>) 2. Corn root aphid (<u>Anuraphis maidi-radicis</u>) Other aphids receiving votes: cowpea aphid (<u>Aphis medicaginis</u>), white cotton root aphid (<u>Trifidaphis phaseoli</u>)	9 2
Aleyrodidae	Greenhouse whitefly (<u>Trialeurodes vaporariorum</u>) and <u>T. abutilonea</u> were considered the most important of the whiteflies.	
Coleoptera	1. Boll weevil (<u>Anthonomus grandis</u>) 2. Small darkling ground beetle (<u>Blapstinus rufipes</u>) 3. Pale-striped flea beetle (<u>Systema blanda</u>) 4. Sand wireworm (<u>Horistonotus uhlerii</u>) 5. Grape colaspis (<u>Colaspis flava</u>) Other coleoptera receiving votes: corn silk beetle (<u>Luperodes brunneus</u>), large darkling ground beetle (<u>Eleodes sp.</u>), <u>Limonius sp.</u>, sugarcane beetle (<u>Euetheola rugiceps</u>).	8 4 4 4 4

Order or Family	Insect (In order of importance)	States Reporting
Lepidoptera	1. Bollworm (<u>Heliothis armigera</u>)	11
	2. Tobacco budworm (<u>H. virescens</u>)	7
	3. Cotton leafworm (<u>Alabama argillacea</u>)	7
	4. Fall armyworm (<u>Laphygma frugiperda</u>)	9
	5. Variegated cutworm (<u>Peridroma margaritosa</u>)	8
	6. Yellow-striped armyworm (<u>Prodenia ornithogalli</u>)	8
	7. Granulate cutworm (<u>Feltia subterranea</u>)	5
	8. Salt-marsh caterpillar (<u>Estigmene acrea</u>)	8
	9. Garden webworm (<u>Loxostege similalis</u>)	7
	10. Black cutworm (<u>Agrotis ypsilon</u>)	5
	11. Cotton square borer (<u>Strymon melinus</u>)	4
	12. Cabbage looper (<u>Trichoplusia ni</u>)	6
	Pink bollworm (<u>Pectinophora gossypiella</u>) was rated 2nd in Texas. Other lepidoptera receiving votes: Beet armyworm (<u>Laphygma exigua</u>), stalk borer (<u>Papaipema nebris</u>), western yellow-striped armyworm (<u>Prodenia praefica</u>), pale-sided cutworm (<u>Agrotis malefida</u>).	
Tetranychidae (Spider mites)	1. Two-spotted spider mite (<u>Tetranychus bimaculatus</u>)	9
	2. <u>Tetranychus desertorum</u> (also known as <u>Septanychus texazona</u>)	7
	3. <u>Tetranychus multisetis</u>	2
	4. Strawberry spider mite (<u>T. atlanticus</u>)	2
	5. Pacific mite (<u>T. pacificus</u>)	1

Cotton Insect Conditions in Puerto Rico

Of the predators of COTTON APHID (Aphis gossypii), an introduced coccinellid, Coelophora inaequalis is more abundant in cotton fields at Hacienda Amelia, Santa Isabel than the most common endemic lady beetle, Cycloneda sanguinea. Aphid infestation was general with practically every cotton leaf covered a few weeks ago; however, by January 5, 1953 the population had been reduced to a very low, non-economic level. PINK BOLLWORM (Pectinophora gossypiella) infestation at this plantation is slight, but high at Hacienda Florida, Santa Isabel. Infestations were up to 7 percent at Hacienda Florida at the time of the first picking. (G. N. Wolcott, Rio Piedras)

Hibernating Boll Weevil Survey-Alabama

Limited trash examinations, involving only 20 samples, have been made in central Alabama. The samples were taken from suitable hibernating areas along margins or closely adjacent to cotton fields. The number of live boll weevils during the latter part of December when counts were made varied from 0 to 9 per square yard of trash and averaged 2.6 per square yard of trash. On the acre basis, the number of live weevils varied from 0 to 43,560 per acre of suitable hibernating trash. The average was 12,584 per acre. There have been no population counts of boll weevil in hibernation in central Alabama prior to this year. (F. S. Arant)

Without comparative data the information obtained in this survey cannot be evaluated; therefore, no definite conclusions should be drawn from the results. The information is intended primarily for future reference.

CORRECTION -- Please make the following correction in the list of STATE CLEARING OFFICES, which was published in Vol. 3, No. 1, page 11, January 2, 1953:

Mr. Ed L. Ayers
Plant Commissioner
State Plant Board
Gainesville, Florida

SUMMARY OF INSECT CONDITIONS - 1952

ALABAMA

Reported by F. S. Arant

CORN EARWORM (Heliothis armigera) was considered the most important pest in 1952 in Alabama. This insect caused some damage to corn but was particularly abundant on peanuts, alfalfa, sericea, grain sorghum, clovers, cotton and other crops. The related species, TOBACCO BUDWORM (H. virescens) was also present on cotton and probably other crops. ARMYWORMS, as a group, were considered third in importance. FALL ARMYWORM (Laphygma frugiperda), the most injurious species during the year, damaged peanuts, grain sorghum, corn, alfalfa and other pasture crops. ARMYWORM (Pseudaletia unipuncta) caused considerable damage to pasture crops in northern Alabama. YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) occurred on cotton and some pasture crops but was of less importance. GRASSHOPPERS (Schistocerca americana and Melanoplus femurrubrum and other species) caused rather severe damage in spotted areas over most of the State. Severest damage was to pasture crops, although field crops were attacked in some instances. RICE WEEVIL (Sitophilus oryza) caused moderate to severe damage in stored corn and other grains.

WHITE-FRINGED BEETLES (Graphognathus leucoloma and probably races) were important pests, causing grave concern in several southwestern counties. POTATO LEAFHOPPER (Empoasca fabae) damaged peanuts, potatoes, forage and pasture legumes, and other crops. BOLL WEEVIL (Anthonomus grandis) was considered second only to corn earworm in importance. Damage was light to moderate during the early summer, but was more severe late in the season when considerable rainfall occurred.

HORN FLY (Siphona irritans) was prevalent on cattle and was considered rather high in importance. HOUSE FLY (Musca domestica) was extremely abundant and more difficult to control than in any recent year. SUBTERRANEAN TERMITES (species undetermined) were also outstanding pests. These insects always take a heavy toll in dwelling houses throughout much of the State.

Other insects which were of importance in the State in 1952 are as follows: Common cattle grub (Hypoderma lineatum), mosquitoes (several species), velvetbean caterpillar (Anticarsia gemmatilis), Mexican bean beetle (Epilachna varivestis), cabbageworms, black turpentine beetle (Dendroctonus terebrans), plum curculio (Conotrachelus nenuphar), pea aphid (Macrosiphum pisi), cattle lice, southern corn rootworm (Diabrotica undecimpunctata howardi), green cloverworm (Plathypena scabra), blister beetles (Epicauta vittata and other species).

BEET-LEAFHOPPER ACTIVITY - 1952

UTAH, WESTERN COLORADO and SOUTHERN NEVADA: Beet leafhopper (*Circulifer tenellus*) population in UTAH in 1952 averaged 1.77 leafhoppers per square foot of beet row and was the largest population since 1940 when the leafhoppers averaged 1.63 per square foot. In the tomato growing area from Payson to Tremonton the population averaged 0.76 leafhoppers per square foot compared to 0.19 in 1941 and 1.55 for 1940. In Sevier Valley the population averaged 3.6 per square foot compared to 0.8 in 1941 and 1.93 in 1940. The long distance leafhopper migration was first detected May 4 just north of the southern breeding area and had reached the agricultural area of Utah by May 7. Additional influx of leafhoppers were observed May 20 to 23 and June 6 to 11. Curly-top on canning tomatoes averaged about 12 percent with a range between 5 and 20 percent. On early-market tomatoes in southern Utah curly-top averaged more than 75 percent. A small incidence of curly-top was observed on sugar beets throughout the State; however, in Sevier Valley curly-top averaged 18 percent. The yield of sugar beets in some areas was reduced because of the virus.

In the spring of 1952 growers were warned that the magnitude of the leafhopper movement to the agricultural areas would be larger than any year on record since 1941. The late-winter and early-spring leafhopper population in the southern desert breeding area averaged (in mid-February) 0.09 leafhoppers per square foot compared to 0.01 for 1949, 1950, 1951; 0.04 for 1948; 0.03 for 1947; and 0.05 for 1946. The leafhopper population in the St. George, Utah; Las Vegas, Nevada; and Kingman, Arizona area increased from 2.5 leafhopper per square foot in February to 8.4 leafhoppers per square foot in April. The overwintering population in local breeding areas of northern Utah adjacent to Great Salt Lake and Utah Lake was very small and host plant condition was unfavorable for large increases in population. Samples of leafhoppers from the southern breeding areas showed 10 percent viruliferous compared to 2 percent in 1950 and 1951.

Leafhopper population in western COLORADO averaged 1.5 per square foot of beet row in late May. Additional leafhoppers moved into the tomato and beet area in June after maturing a brood in eastern Utah. In western Colorado about 40 percent of the tomatoes and 45 percent of the beets developed curly-top. Losses to early-market tomatoes from beet leafhopper feeding was almost 100 percent in southern NEVADA. Approximately 4 percent of the tomato seedlings developed curly-top symptoms. (H. E. Dorst)

IDAHO and EASTERN OREGON: The population of beet leafhoppers that entered the winter of 1951-52 in southern IDAHO was the second largest since 1940, and they entered the winter under variable conditions. Germination of winter annual mustards over most of southwestern Idaho occurred soon after the summer weed-host plants had dried, while in southcentral Idaho there was very little germination during the fall of 1951. Fall-germinated plants made very little growth during the long, cold winter of 1951-52, which was also unfavorable for leafhopper survival. Spring surveys in 1952 showed a medium population of overwintered beet leafhoppers in southwestern Idaho and a low population in southcentral Idaho. Rains and melted snow in March caused additional germination of winter annuals and gave good germination of Russian-thistle (*Salsola kali* var. *tenuifolia*), the important summer host. In southwestern Idaho the spring weed-host plants of this insect were generally abundant and widely distributed, and made good growth except in some areas where premature drying occurred. The mustards that germinated in the fall of 1951 in southcentral Idaho were sparse since germination occurred only in the most favorable situations, while the 1952 spring-germinated mustards were fairly abundant and widely distributed. In southcentral Idaho the spring weed-host plants were generally intermixed with downy chess (*Bromus tectorum*), a nonhost grass, that reduces host plant favorability for producing large numbers of leafhoppers. The movement of the spring-generation beet leafhoppers from their breeding areas to beetfields on the western edge of the Twin Falls, Idaho, irrigation tract started on June 2 and reached the peak on June 20, when the average population was 244 leafhoppers per 100 square-foot samples. The peak population was 519, which was less than the 18-year average of 763 adult beet leafhoppers per 100 samples. Tests of spring-generation leafhoppers from beet fields in June in the Buhl-Castleford area showed that 29 percent carried the virus of the curly-top disease. Surveys of representative fields of garden beans grown for seed in southern Idaho showed that 0.83 percent of the plants was infected with curly top, while only 0.18 percent of Great Northern U. I. 123 beans was infected. In the Nyssa, OREGON, and Twin Falls and Burley, Idaho, districts, 25.7, 7.2, and 6.2 percent, respectively, of sugar-beet plants showed obvious curly-top infection. Surveys in September 1952 showed the largest acreage of Russian-thistle in the past 10 years. The number of leafhoppers that entered the winter of 1952-53 was the lowest since 1949, and they entered the winter under unfavorable conditions. (J. R. Douglass)

SURVEY METHODS

TOMATO FRUITWORM (Heliothis armigera)

Surveys are conducted weekly from late June to late August in the tomato-growing areas of Utah to determine the expected populations of tomato fruitworm. Eight samples, each containing twenty-five compound leaves, are taken at random in each of two fields in the various tomato-growing localities. A total of sixteen to twenty fields over the entire tomato-growing area are surveyed. Each sample is taken by beginning either at the top or the bottom of a branch and examining both sides of all the leaves for tomato fruitworm eggs. Leaves containing eggs are removed from the plants and the eggs examined under a hand lens to determine definitely if they are tomato fruitworm eggs. The number of fruitworm eggs are then recorded per one hundred leaves. With this information as a basis the average number of eggs per one hundred leaves is estimated for the entire tomato-growing area each week.

It has been determined in Utah that the presence of an average of one egg per one hundred leaves anytime during the period of fruit setting will result in 2 to 5 percent wormy tomatoes, which is sufficient to justify control measures. (W. E. Peay)

ONION THRIPS (Thrips tabaci)

The following method ^{1/} is used at the Twin Falls, Idaho, laboratory of the Bureau of Entomology and Plant Quarantine for the determination of thrips populations on onions in experimental plots: Samples of onion plants are gathered and enclosed in cardboard tubes having an inside diameter of 5-1/8 inches and a height of 7 inches. The tube has a cloth top glued in place and is provided with a slip-on metal cover to close the open end. The individual sample consists of 10 onion plants, which are cut off just above the ground. The plants are placed in the tube with the butt ends against the cloth top, and the portions of the leaves projecting beyond the cylinder are cut off squarely. If thrips populations are being determined from onion seedheads, a sample of five heads is used and the same procedure followed as for onion plants.

^{1/} Shirck, F. H. Collecting and counting onion thrips from samples of vegetation. Jour. of Econ. Ent. 41: (1) 121-123.

Separation of the thrips from the sample is accomplished by drying it at 115° F. for 24 hours. Before drying, the slip-on lid is replaced by a metal funnel having a 1-inch vertical band around its top to provide a close fit with the cardboard tube. The funnel is attached through a cork to a small jar containing a 0.5-percent solution of formalin. After exposure to the 115° temperature, the thrips leave the sample and fall into the formalin solution, from which they are later strained and counted. The formalin acts as a preservative to prevent the thrips from attack by molds in case the counting is delayed. The strainer, which also serves as a counting device, consists of a piece of black cloth cemented to a metal ring of convenient size to be used under binoculars. Guide lines 3/8 inch apart are stitched on the black cloth with white thread. Before beginning the counts, the black cloth is pressed firmly on an absorbent cloth to draw out the excess moisture remaining in the cloth. In field experiments one sample of 10 plants, or 5 seedheads, per plot has been used to evaluate the results of control applications. (F. H. Shirck)

WIREWORMS (Elateridae)

A survey method for determining wireworm populations as a basis for biological and control studies has been developed for the irrigated lands of the Pacific Coast States. This method in modified form could be used to determine almost any wireworm population wherever the wireworms can be separated from the soil by screening. It can also be used by farmers to determine how many wireworms are present in a field before planting, and thus serve as a guide in avoiding damage to susceptible crops or indicating the necessity of using soil insecticides to reduce the infestation.

A simple portable soil sifter ^{1/} can be made from a piece of 1/4 inch spring steel about 36 inches long, with a quarter twist near the base, and fastened into the long arm of a T-shaped base of 2x6 inch wood plank. A suitable cross arm of same steel with a bend in the ends is welded to the top of the upright to hold screen frames. Frames can be about 24 inches square made from 3/4x3 inch wood, with ordinary hardware screen (4-mesh) or window screen (12-mesh) tacked on tightly.

^{1/} Shirck, F. H. A hand-operated shaker for sifting soil. 1941.
Bureau of Entomology and Plant Quarantine, ET-185.

The method in brief comprises the digging of at least 20 random test holes per plot, or per acre, with a 6-inch post hole digger to a depth of one foot. The soil from the 20 test holes, collected in pails, is passed through the coarse 4-mesh screen onto the 12-mesh screen where the shiny yellow wireworms are readily separated, counted, and kept for species identification.

The data can be arranged in the following classification for comparative purposes, based on the potential damage that wireworms can do to field and truck crops:

Infestation or Damage	No. of wireworms per 20 post-holes	No. of wireworms per cu. ft. (approx.)	Rating
Non-economic	0	0	0
Light	1-3	Less than 1	1
Moderate	4-8	1	2
Heavy	9-19	2	3
Severe	20 or more	4 or more	4

The above infestations would apply to a number of row crops, such as sugar beets, beans, peas, carrots, onions, lettuce and grains. In case of hill crops, such as corn, melons and potatoes, these infestations would cause more damage because of the wireworms concentrating in the hills. This is especially true of potatoes where the tubers stay in the ground for a longer time subject to feeding by wireworms. Sometimes even though a zero population is indicated by this method there may be considerable damage to harvested tubers. If any wireworms are suspected to be present in a field, it should be avoided for the growing of potatoes or else treated to kill the wireworms first.

Methods of sampling soil for wireworms are also described by Jones 2/.
(Division of Truck Crop and Garden Insect Investigations)

2/ Jones, E. W. 1937. Practical Field Methods of Sampling Soil for Wireworms. Jour. Agr'l Res., 54, (2), pp. 123-134, ill.

1. The soil was moist in brief compasses the digging of at least 20 random test holes
2. per foot or per acre, with a 6-inch post hole digger to a depth of one foot.
3. The soil from the test holes, collected in bags, is passed through the
4. coarse 4-mesh sieve onto the 11-mesh sieve where the shiny yellow
5. wireworms are readily separated, counted, and kept for species identification.

6. The data can be arranged in the following classification for comparative
7. purposes, based on the potential damage that wireworms can do to field
8. and truck crops:

Rating	No. of wireworms per cu. ft. (approx.)	Classification of potential damage
0	0	1. Non-existent
1	1 less than 1	2. Light
2	1	3. Moderate
3	2	4. Heavy
4	4 or more	5. Severe

9. The above classifications would apply to a number of row crops, such as sugar
10. beets, beans, peas, carrots, onions, lettuce and grain. In case of hill
11. crops, such as corn, melons and potatoes, these infestations would cause more
12. damage because of the wireworms concentrating in the hills. This is espe-
13. cially true of potatoes where the tubers stay in the ground for a longer time
14. subject to feeding by wireworms. Sometimes even though a zero population
15. is indicated by this method there may be considerable damage to harvesting
16. losses. If any wireworms are suspected to be present in a field, it should
17. be avoided for the growing of potatoes or else treated to kill the wireworms
18. first.

19. Methods of sampling soil for wireworms are also described by Jones.
20. (Division of Truck Crop and Garden Insect Investigations)

